

## CLAIMS

1. A fixing device comprising:

a fixing member which is in contact with an unfixed image formed on a printing medium with a developer; and

a pressure member which is in contact with the fixing member,

the fixing member and the pressure member sandwiching the printing medium so as to feed the printing medium, so that the unfixed image on the printing medium is fixed on the printing medium,

the fixing device further comprising holding electric field generating means for generating a holding electric field which is an electric field in a direction for holding a reverse polarity developer on the printing medium, the reverse polarity developer having a polarity opposite to a polarity of the developer which forms an image on the printing medium.

2. The fixing device as set forth in claim 1, wherein said holding electric field generating means includes bias voltage applying means for applying a bias voltage, which generates the holding electric field, to at least one of the fixing member and the pressure member.

3. The fixing device as set forth in claim 2, wherein

said bias voltage applying means applies as the bias voltage a voltage, having a polarity opposite to a polarity of the reverse polarity developer, to the fixing member.

4. The fixing device as set forth in claim 2, wherein said bias voltage applying means applies as the bias voltage a voltage, having a same polarity as the reverse polarity developer, to the pressure member.

5. The fixing device as set forth in claim 3 or 4, wherein a time it takes for a potential to decay is 0.2 second or longer, the potential being produced by the bias voltage on a surface of a member to which the bias voltage is applied.

6. The fixing device as set forth in claim 3 or 4, wherein an absolute value of a current is 0.05  $\mu\text{A}$  or more and 150  $\mu\text{A}$  or less, the current flowing when the bias voltage is applied and flowing in a member to which the bias voltage is applied.

7. The fixing device as set forth in claim 2, wherein the fixing member includes a conductive core bar, an intermediate layer on the conductive core bar, and a surface insulating layer on the intermediate layer.

8. The fixing device as set forth in claim 7, wherein:  
the surface insulating layer of the fixing member has a surface resistivity of  $10^{14} \Omega$  or higher; and  
said bias voltage applying means applies the bias voltage to the fixing member.

9. The fixing device as set forth in claim 7, wherein:  
the surface insulating resistive layer of the fixing member has a volume resistivity higher than  $10^{13} \Omega \cdot \text{cm}$ ; and  
said bias voltage applying means applies the bias voltage to the fixing member.

10. The fixing device as set forth in claim 2, wherein:  
the pressure member includes a conductive core bar, an insulating elastic layer on the conductive core bar, an intermediate layer on the insulating elastic layer, and a surface resistive layer on the intermediate layer;  
a potential given member is provided on a surface of the pressure member;  
said bias voltage applying means applies the bias voltage to the potential given member; and  
the bias voltage is applied through the potential

given member to a surface of the pressure member or near the surface of the pressure member.

11. The fixing device as set forth in claim 10, wherein:

the surface resistive layer of the pressure member has a surface resistivity of  $10^7 \Omega$  or higher; and

said bias voltage applying means applies the bias voltage to the pressure member.

12. The fixing device as set forth in claim 10, wherein:

the surface resistive layer of the pressure member has a volume resistivity of  $10^5 \Omega \cdot \text{cm}$  or higher; and

said bias voltage applying means applies the bias voltage to the pressure member.

13. The fixing device as set forth in claim 10, wherein:

the fixing member includes first heating means for heating a surface of the fixing member; and

the potential given member also functions as a heating member including second heating means for heating the surface of the pressure member.

14. The fixing device as set forth in claim 10, wherein the potential given member is a cleaning member for removing the developer remaining on the surface of the pressure member.

15. The fixing device as set forth in claim 10, wherein the potential given member is a conductive electrode member or a semiconductive electrode member.

16. The fixing device as set forth in claim 10, wherein:

the bias voltage is applied from first bias voltage applying means to the fixing member; and

the bias voltage is applied from second bias voltage applying means to the potential given member.

17. The fixing device as set forth in claim 10, further comprising at least one temperature detecting element which detects surface temperatures of the fixing member, the pressure member, and the heating member, the temperature detecting element including an insulating film layer and a heat-resistant release layer on a heat-receiving surface of the temperature detecting element and a protective layer on a surface opposite to the heat-receiving surface.

18. The fixing device as set forth in claim 17, wherein the insulating film layer, the heat-resistant release layer, and the protective layer of the temperature detecting element are extended to a housing of the temperature detecting element so as to cover an elastic member of the temperature detecting element.

19. A fixing method for fixing an unfixed image, formed on a printing medium with a developer, on the printing medium by sandwiching and feeding the printing medium by a fixing member which is in contact with the unfixed image and a pressure member which is in contact with the fixing member, comprising the step of:

giving a holding electric field which is an electric field in a direction for holding a reverse polarity developer on the printing medium, the reverse polarity developer having a polarity opposite to a polarity of the developer which forms an image on the printing medium.

20. The fixing method as set forth in claim 19, wherein the holding electric field is given by applying a bias voltage to at least one of the fixing member and the pressure member.

21. An image forming apparatus comprising  
a fixing device including:

a fixing member which is in contact with an  
unfixed image formed on a printing medium with a  
developer; and

a pressure member which is in contact with  
the fixing member,

the fixing member and the pressure member  
sandwiching the printing medium so as to feed the  
printing medium, so that the unfixed image on the  
printing medium is fixed on the printing medium,

the fixing device further including

holding electric field generating means for  
generating a holding electric field which is an electric  
field in a direction for holding a reverse polarity developer  
on the printing medium, the reverse polarity developer  
having a polarity opposite to a polarity of the developer  
which forms an image on the printing medium.

22. The image forming apparatus as set forth in  
claim 21, further comprising a transfer device which is  
provided upstream of the fixing device in a feeding  
direction of the printing medium and which transfers a  
developer image from a developer image carrier to the  
printing medium, the transfer device using a contact

transfer method in which the transfer device is in contact with the developer image carrier.